

From: Michael Scott
To: Joseph_Hegner@dom.com
Date: 4/13/04 3:01PM
Subject: DRAFT REQUEST FOR ADDITIONAL INFORMATION PACKAGE 4

Please find attached the NRC staff's fourth package of preliminary questions, in the form of draft requests for additional information (RAIs) for the North Anna ESP review.

As for previous transmittals of preliminary questions, Dominion may request a phone con or meeting with the cognizant staff if Dominion needs clarification of the RAIs or believes the information requested in them has already been provided or is not needed. Please let me know if you desire such a phone con or meeting.

After the phone con or meeting occurs (if requested) and planned response dates are determined (if applicable), the staff will send the RAIs under cover letter with copy to the docket. The letter will also note that the phone con or meeting occurred (if it did) and the mutually agreed upon response date(s) to the RAIs.

The RAIs in this package address the areas of hydrology, climatology, site hazards, physical security, and quality assurance. There is also an RAI regarding the plant parameter envelope table in SSAR Section 1.3. Additional RAIs will likely be developed in these areas and will be forwarded to you on or before 6/3/04 in accordance with the planned North Anna review schedule. We are providing these RAIs at this time to facilitate the review and to support meeting the review schedule. Your timely response to them will also support meeting the review schedule milestones. Partial submittals would be welcome to minimize delays.

Please contact me if you have questions.

Sincerely,

Michael L (Mike) Scott
Senior Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Phone (301) 415-1421

CC: Al Tardiff; Clifford Munson; Goutam Bagchi; Jay Lee; Kazimieras Campe; Kevin Coyne; Laura Dudes; Nanette Gilles; Paul Prescott; R. Brad Harvey; Raj Anand; Robert Weisman; Stephen Koenick

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Subject: DRAFT REQUEST FOR ADDITIONAL INFORMATION PACKAGE
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Joseph_Hegner (Joseph_Hegner@dom.com)		

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KMC1 CC (Kazimieras Campe)	Opened	04/14/04 07:43AM
KXC CC (Kevin Coyne)	Opened	04/15/04 07:17AM
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RKA CC (Raj Anand)	Opened	04/15/04 08:31AM
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DRAFT

North Anna Early Site Permit Application Site Safety Analysis Report (SSAR) Requests for Additional Information (RAI) RAI LETTER NO. 4

SSAR Section 1.3, Plant Parameters Envelope

RAI 1.3-1

SSAR Section 1.3 states that "This PPE approach provides sufficient design details to support NRC review of the ESP application while also recognizing that technical developments may result in new reactor technologies becoming available that may not have been envisioned at the time of ESP application submittal." While Table 1.3-1 provides bounding values of plant design parameters, it also states for some parameters: "A site specific value is provided for this parameter." This language appears to imply that a site-specific characteristic is provided elsewhere in the application. Please explain the use, in the application, of the plant parameters in Table 1.3-1 for the cases in which site-specific characteristics are provided. Also, please clearly identify site characteristics and plant design parameters that you propose be included as bases for an ESP, should one be issued.

SSAR Section 2.2.2, Description of Nearby Industrial, Transportation, and Military Facilities

RAI 2.2.2-1

Please provide a scoping description of the nature of the industrial development (e.g., light commercial, heavy industrial) that may occur pursuant to the Louisa County Board of Supervisors zoning ordinance allowing industrial development of approximately 620 acres near the site exclusion area boundary (EAB) and indicate the approximate zoned area boundary location on a map that includes the ESP site.

RAI 2.2.2-2

Please provide separate estimates of the annual flight frequency for each of the three military training routes (IR714, IR760, and VR1754) identified in SSAR Section 2.2.2.6.2. The estimates should represent maximum flight frequencies projected over the proposed term of the ESP. Please indicate the source of the estimated flight frequency data.

RAI 2.2.2-3

Please state whether there are any types of pipelines carrying potentially hazardous materials (e.g., propane, chlorine) within 10 miles of the ESP site. If any hazardous material pipelines are identified, please provide their location on a map (to be withheld from public disclosure per 10 CFR 2.390(d)) that includes the ESP site.

SSAR Section 2.3.1, Regional Climatology

RAI 2.3.1-2

SSAR Section 2.3.1 states that a total of 7 hurricanes and 2 tropical storms passed within 100 nautical miles of the ESP site from January 1950 through June 2002. Please explain whether the tropical storm and hurricane data presented in the SSAR addresses hurricane data for the period 1950 to 1993 (for example, two hurricanes that brought record rainfall to Richmond during 1955, Connie and Diane, as well as hurricane Camille in 1969). If it does not, please address hurricanes in this period or explain why this information is not needed. Also, please include information on Hurricane Isabel in September 2003, or explain why this information is not needed. Please evaluate the impact of these data on the North Anna site characteristics.

RAI 2.3.1-3

SSAR Section 2.3.1 states that a total of 65 hail storms, 19 snowstorms, and 10 ice storms were reported for the period between 1950 and 2002. These statistics were apparently based on information listed in the U.S. Storm Events Database on the National Climatic Data Center's web site. However, this database only includes hail data from 1955 through the present and snow and ice events from 1993 through the present. Please identify the source of data for hail events before 1955, and the source of data for snow and ice events before 1993, or clarify the time periods for which data are available for these events.

RAI 2.3.1-4

Please provide an estimate of lightning strike frequencies in the vicinity of the North Anna ESP site.

RAI 2.3.1-5

The extreme meteorological values for Charlottesville and Richmond presented in SSAR Section 2.3.1.3.4 and SSAR Table 2.3-5 appear to be based on data recorded through 1987. Please address extreme meteorological values for Charlottesville and Richmond from 1987 to the present, or justify why such information is not needed. Also, please address data from other nearby climatic stations in the same climate division as the North Anna ESP site, such as Louisa and Partlow, to confirm that the Charlottesville and Richmond data presented in the SSAR are representative of the regional climatology.

SSAR Section 2.3.2, Local Climatology

RAI 2.3.2-1

Please discuss and provide an evaluation of the potential modification to local meteorological conditions as a result of the presence and operation of a nuclear plant or plants falling within the plant parameter envelope (PPE) specified in the SSAR. Include a discussion on the potential changes in the normal and extreme local meteorological values presented in SSAR Sections 2.3.1 and 2.3.2 resulting from plant construction and operation. The effects of the following on local meteorological conditions should be included in the evaluation:

- a) Terrain modifications that would be expected to occur as a result of construction of a nuclear power plant or plants falling within the PPE (e.g., removal of trees, leveling of ground, installation of lakes and ponds).
- b) Addition of materials and structures of a nuclear power plant or plants falling within the PPE (e.g., buildings, switchgear, parking lots, roads).
- c) Heat and moisture sources that would be expected to result from the operations of a nuclear power plant or plants falling within the PPE.

RAI 2.3.2-2

Please identify the air quality characteristics of the site that would be design and operating bases for a nuclear plant or plants that might be constructed on the ESP site.

SSAR Section 2.4.1-1, Hydrologic Description

RAI 2.4.1-1

Please provide the following information:

- a) Survey coordinates (and associated datum) for the ESP footprint within which all structures, systems, and components important to safety would be located
- b) Locations of any existing aquifers in the proposed site area
- c) Layout of intake tunnels and piping from North Anna Reservoir to the proposed units
- d) Maximum total service flow rate for the two existing units, and the combined expected service flow rate when all four (2 existing + 2 proposed) units would be operating
- e) Documentation of the margin in the available water budget, including allowance for uncertainties associated with future water and land use, for all four (2 existing + 2 proposed) units

RAI 2.4.1-2

SSAR Section 2.4.1 states that during critical low-flow periods, makeup water will be obtained from both North Anna Reservoir and an external source to be identified by the COL applicant. Please provide the amount of supplemental cooling water needed for this purpose.

RAI 2.4.1-3

SSAR Figure 2.4-10 displays the combined North Anna Reservoir and Waste Heat Treatment Facility stage-storage volume relationship. Please provide a description of the method and the data used to construct this figure. Please include in the figure data for lake volumes down to (at least) stage elevation 219 ft.

RAI 2.4.1-4

SSAR Section 2.4.1 provides cooling water withdrawal rates of 2540 cfs for Unit 3 and 44 cfs for Unit 4. Please state whether these rates are based on annual averages or maximums. If they are based on annual averages, please provide estimates for daily maximums. Also, please provide the basis for consumptive loss associated with Unit 4's cooling tower.

SSAR Section 2.4.2, Floods

RAI 2.4.2-1

Please calculate both onsite drainage potential and the availability of cooling water during critical low-flow periods, including sufficient margins to account for future urbanization of the watershed. These margins should be based upon available county and/or state growth management plans. Please provide a description of likely upstream land use changes and changes in downstream water demand that would alter either flood risk or the intensity and frequency of low-flow conditions. Also, please address the impact of factors affecting potential runoff (urbanization, forest fire, or change in agricultural use), erosion, and sediment deposition on the determination of flood elevation at the site.

RAI 2.4.2-2

Please describe the methodology for documenting historical hill slope failures in the watershed (interviews, literature reviews, web searches, etc.). Please include, for all documented hill slope failures, both the failure mechanism and hill slope properties (e.g., terrain grade, drainage, and soil type).

RAI 2.4.2-3

Please describe the methodology for documenting seismically induced seiches in the Lake Anna Reservoir (interviews, literature reviews, web searches, etc.) Please address any evidence of historical seismically induced seiche in the area, including a description of the seismic event, land damage, date of occurrence, etc.

RAI 2.4.2-4

Please explain why drainage capacity at the existing grade is sufficient to accommodate local intense precipitation. If capacity is not sufficient, please describe (in sufficient detail to show feasibility) any active safety-related drainage systems proposed for the new units. In addition, please indicate whether or not drainage from the proposed site will be accomplished through a drainage canal under the existing railroad spur.

SSAR Section 2.4.3, Probable Maximum Flood on Streams and Rivers

RAI 2.4.3-1

Please provide a calibrated unit hydrograph definition, expressed in terms of input parameters for the Hydrologic Engineering Center watershed modeling code (HEC-1), for an adjacent unregulated basin of size similar to the one in which the site is located.

RAI 2.4.3-2

SSAR Section 2.4.3 describes use of the HEC-1 computer program for computing runoff from the watershed and routing the PMF. Please provide the supporting input files and the software version information that were used to generate results discussed in these sections.

SSAR Section 2.4.4, Potential Dam Failures

RAI 2.4.4-1

Please document the impounded volumes and the locations of Lake Louisa and Lake Orange relative to those of Lake Anna. Also, please describe the methodology for documenting impacts of failure of dams on these lakes on the proposed units.

RAI 2.4.4-2

SSAR Section 2.4.4 describes use of a mechanical draft cooling tower over a buried water storage basin. Please provide design parameters, such as storage capacity, for this underground basin.

SSAR Section 2.4.7, Ice Effects

RAI 2.4.7-1

Please provide details, including location, duration, and height, on the occurrence of ice dams and subsequent downstream flood waves in the region.

RAI 2.4.7-2

SSAR Section 2.4.7.4 states that formation of anchor ice on the trash racks and screens would be assessed during design of the intake structures by the COL applicant. Please provide site characteristics relevant to such an assessment, including ice anchor thickness and potential ice depth.

RAI 2.4.7-3

SSAR Section 2.4.7.5 states that emergency cooling and service water needed to maintain the proposed units in a safe mode would be supplied by a separate ultimate heat sink (UHS). Please describe the source of the cooling water that would be used for this purpose.

RAI 2.4.7-4

SSAR Section 2.4.7.5 states that both emergency and service water will be provided by the UHS, and that safety-related facilities will not be affected by ice floe accumulation. Please identify the minimum volume of the UHS, and indicate the maximum depth of ice formation in the water stored in the UHS that will ensure protection from freezing or ice formation.

RAI 2.4.7-5

SSAR Section 2.4.7.6 states that the PPE snow load is 50 pounds per square foot. Please explain how the local snow load (site characteristic) was calculated. If it was not calculated via the meteorological attributes discussed in Section 2.3.1.3.4, please justify why not.

SSAR Section 2.4.9, Channel Diversions

RAI 2.4.9-1

Please provide information regarding whether there is any historical or geological evidence of the North Anna River meandering or being diverted or meandering upstream of the proposed site.

SSAR Section 2.4.11, Low Water Considerations

RAI 2.4.11-1

Please discuss the critical ambient conditions that might limit operation of the UHS or constrain safety-related cooling tower design. One example might be a specific combination of temperature and relative humidity.

SSAR Section 2.4.12, Groundwater

RAI 2.4.12-1

SSAR Figure 2.4-15 reports data between December 2002 and June 2003. Please update the figure with piezometer data from June 2003 to September 2003, and piezometer data prior to December 2002, if it exists, or explain how this span of data represents the seasonal variation in groundwater and how the ESP subsurface investigation program is consistent with previous groundwater measurements.

SSAR Section 2.4.13, Accidental Releases of Liquid Effluents to Ground and Surface Waters

RAI 2.4.13-1

Please provide a conceptual model of the subsurface environment, with reference to drill logs, as-built fill, and compaction plans. The subsurface conceptual model should provide estimates (and the basis for these estimates) for the hydraulic conductivity of the soil, surface recharge rates, soil and ambient groundwater chemical properties, and piezometric boundary conditions.

SSAR Section 13.6, Industrial Security

RAI 13.6-1

Please state whether the plant parameter envelope and surrounding terrain features will or will not limit the establishment of the 360-foot distance specified in Regulatory Guide 4.7 (Revision 2, April 1988) from vital equipment/structures to physical protection components such as protected area barriers/isolation zones, or identify those special measures or analyses that have been or will be accomplished to show that adequate security plans can be developed. Response may be considered proprietary per 10 CFR 2.390(d) or safeguards information per 10 CFR 73.21.

SSAR Section 17.1, ESP Quality Assurance

RAI 17.1-1

Please describe the quality assurance measures used to authenticate and verify data retrieved from internet websites that supports information in the SSAR that would affect the design, construction, or operation of structures, systems, and components important to safety.